

- 1 *Sub A4*) 1. An apparatus for recovering a failed database data set, the apparatus  
2 comprising:  
3       a memory device storing executable modules, the modules comprising:  
4           a recovery utility having,  
5                a backup copy restore utility configured to read and restore  
6                a backup copy of the database data set,  
7                a change accumulation manager configured to read a change  
8                accumulation data set in parallel with the read and restore of the  
9                backup copy to derive detail records, and  
10              an image copy restore utility configured to apply the detail  
11              records to the backup copy during the read and restore of the  
12              backup copy to thereby create a restored database data set.  
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14 *Sub B1*) 2. The apparatus of claim 1 wherein the backup copy restore utility is further  
15        configured to read and restore a plurality of backup copies in parallel.  
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17        3. The apparatus of claim 1 wherein the change accumulation manager is further  
18        configured to read in parallel a plurality of change accumulation data sets to derive detail  
19        records.  
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- 1       4. The apparatus of claim 1 wherein the recovery utility further comprises a  
2 merge end point utility configured to determine the merge end point reflective of a  
3 separation of detail and spill records in the log.
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- 5       5. The apparatus of claim 1 wherein the recovery utility further comprises  
6 a log manager configured to read a log to derive updates subsequent to a merge  
7 end point, and  
8            a database update manager configured to apply the updates to the restored  
9 database data set.
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- 11      B| 6. The apparatus of claim 5 wherein the log manager is further configured to read  
12 a plurality of logs in parallel to derive updates subsequent to the merge end point.
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- 14      7. The apparatus of claim 5 wherein the database update manager is further  
15 configured to apply the updates after the backup copy is restored.
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- 17      8. The apparatus of claim 1 further comprising a virtual memory and wherein the  
18 change accumulation manager is further configured to store at least a portion of the detail  
19 records in the virtual memory.
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1        9. The apparatus of claim 1 wherein the backup copy restore utility is configured  
2 to send a query to the change accumulation manager for a detail record associated with  
3 the database data set during the read and restore of the backup copy.

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5        10. The apparatus of claim 9 wherein the change accumulation manager is  
6 configured to save the query if the detail record has not yet been read by the change  
7 accumulation manager and further configured to send the detail record to the image copy  
8 restore process if the detail record has been read by the change accumulation manager.

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- 1      *Subj A5* 11. A method for recovering a failed database data set, the method comprising:  
2                reading and restoring a backup copy of the database data set;  
3                reading a change accumulation data set in parallel with the reading and restoring  
4                of the backup copy to derive detail records associated with the database data set; and  
5                applying the detail records to the backup copy during the reading and restoring of  
6                the backup copy to thereby create a restored database data set.  
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8      *B1* 12. The method of claim 11 further comprising reading and restoring a plurality  
9                of backup copies in parallel, wherein the backup copies are associated with corresponding  
10          failed database data sets.  
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12        13. The method of claim 11 further comprising reading a plurality of change  
13                accumulation data sets in parallel to derive detail records.  
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15        14. The method of claim 11 further comprising reading a log to derive updates  
16                subsequent to a merge end point and applying the updates to the restored database data  
17                set.  
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19        *Subj Ap* 15. The method of claim 14 wherein reading the log and applying the updates are  
20                executed after restoring the backup copy.

1                   B1 16. The method of claim 11 further comprising reading a plurality of logs in  
2 parallel to derive updates subsequent to the merge end point and applying the updates to  
3 the restored database data set.

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5                   17. The method of claim 11 further comprising determining the merge end point,  
6 wherein the merge end point is reflective of a separation of detail and spill records in the  
7 log.

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9                   18. The method of claim 11 further comprising storing at least a portion of the  
10 detail records in a virtual memory.

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12                  19. The method of claim 11 furthering comprising generating a query to prompt  
13 for a detail record associated with the database data set.

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16                  20. The method of claim 19 further comprising saving the query if the detail  
17 record has not yet been read and responding to the query by applying the detail record to  
18 the backup copy if the detail record has been read.

1 *Suzy A* 21. A computer readable medium having stored thereon computer executable  
2 instructions for performing a method for recovering a failed database data, the method  
3 comprising:

4 reading and restoring a backup copy of the database data set;

5 reading a change accumulation data set in parallel with the reading and restoring  
6 of the backup copy to derive detail records associated with the database data set; and

7 applying the detail records to the backup copy simultaneously during the reading  
8 and restoring of the backup copy to thereby create a restored database data set.

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10 *B* 23. The computer readable medium of claim 22 wherein the method further  
11 comprises reading and restoring a plurality of backup copies in parallel, wherein the  
12 backup copies are associated with corresponding failed database data sets.

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14 24. The computer readable medium of claim 22 wherein the method further  
15 comprises reading a plurality of change accumulation data sets in parallel to derive detail  
16 records.

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18 25. The computer readable medium of claim 22 wherein the method further  
19 comprises reading a log to derive updates subsequent to a merge end point and applying  
20 the updates to the restored database data set.

1 Sub-  
2 26. The computer readable medium of claim 25 wherein reading the log and  
3 applying the updates are executed after restoring the backup copy.

4 B 27. The computer readable medium of claim 22 wherein the method further  
5 comprises reading a plurality of logs in parallel to derive updates subsequent to the merge  
6 end point and applying the updates to the restored database data set.

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8 28. The computer readable medium of claim 22 wherein the method further  
9 comprises determining the merge end point, wherein the merge end point is reflective of a  
10 separation of detail and spill records in the log.

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12 29. The computer readable medium of claim 22 wherein the method further  
13 comprises storing at least a portion of the detail records in a virtual memory.

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15 30. The computer readable medium of claim 22 wherein the method further  
16 comprises generating a query to prompt for a detail record associated with the database  
17 data set.

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19 31. The computer readable medium of claim 30 wherein the method further  
20 comprises saving the query if the detail record has not yet been read and responding to the  
21 query by applying the detail record to the backup copy if the detail record has been read.